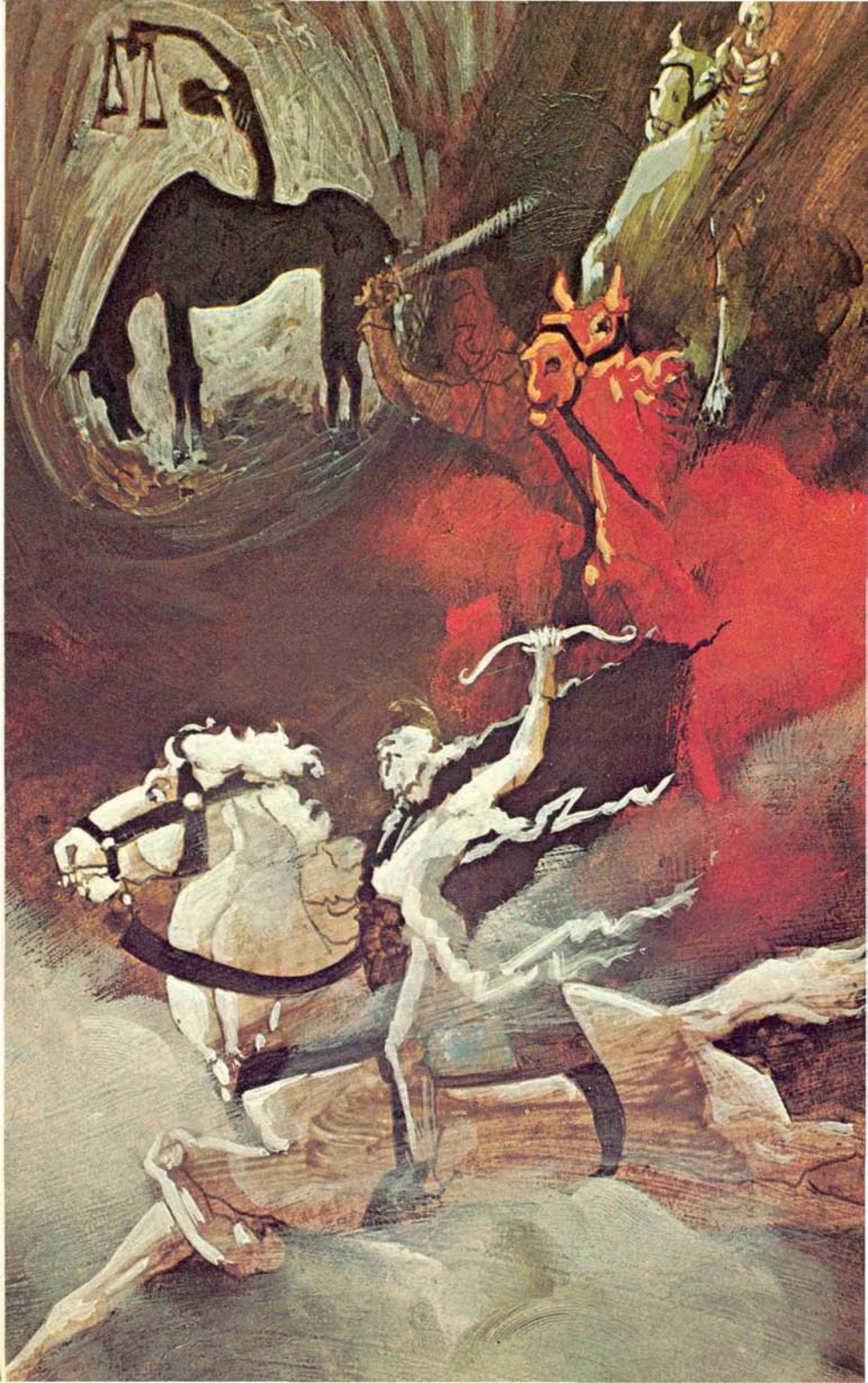
4 Horsemen of the Apocalypse

THE BLACK HORSE



FAMINE

In the book of Revelation we find a disturbing vision of four fearsome horsemen (Rev. 6:1-8). Each of these horsemen is a symbol of the four major punishments to be inflicted upon a rebellious mankind — probably in the not-too-distant future! Each represents the final, end-time culmination of the major crises with which the world has been confronted for centuries — false religion, war, famine and disease epidemics. This series of booklets will make the prophecies of Revelation 6 come to life. You will learn the significance of each symbolic horse and rider. This message is one of the most frightening in all of the Bible. You need to be informed and prepared for what's ahead in Bible prophecy!



4 Horsemen of the Apocalypse

THE BLACK HORSE

FAMINE

AMBASSADOR COLLEGE PRESS • Pasadena, California

Illustration by Brian Knowles

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Cover — Artwork by Allen Merager. Photo by Gary George

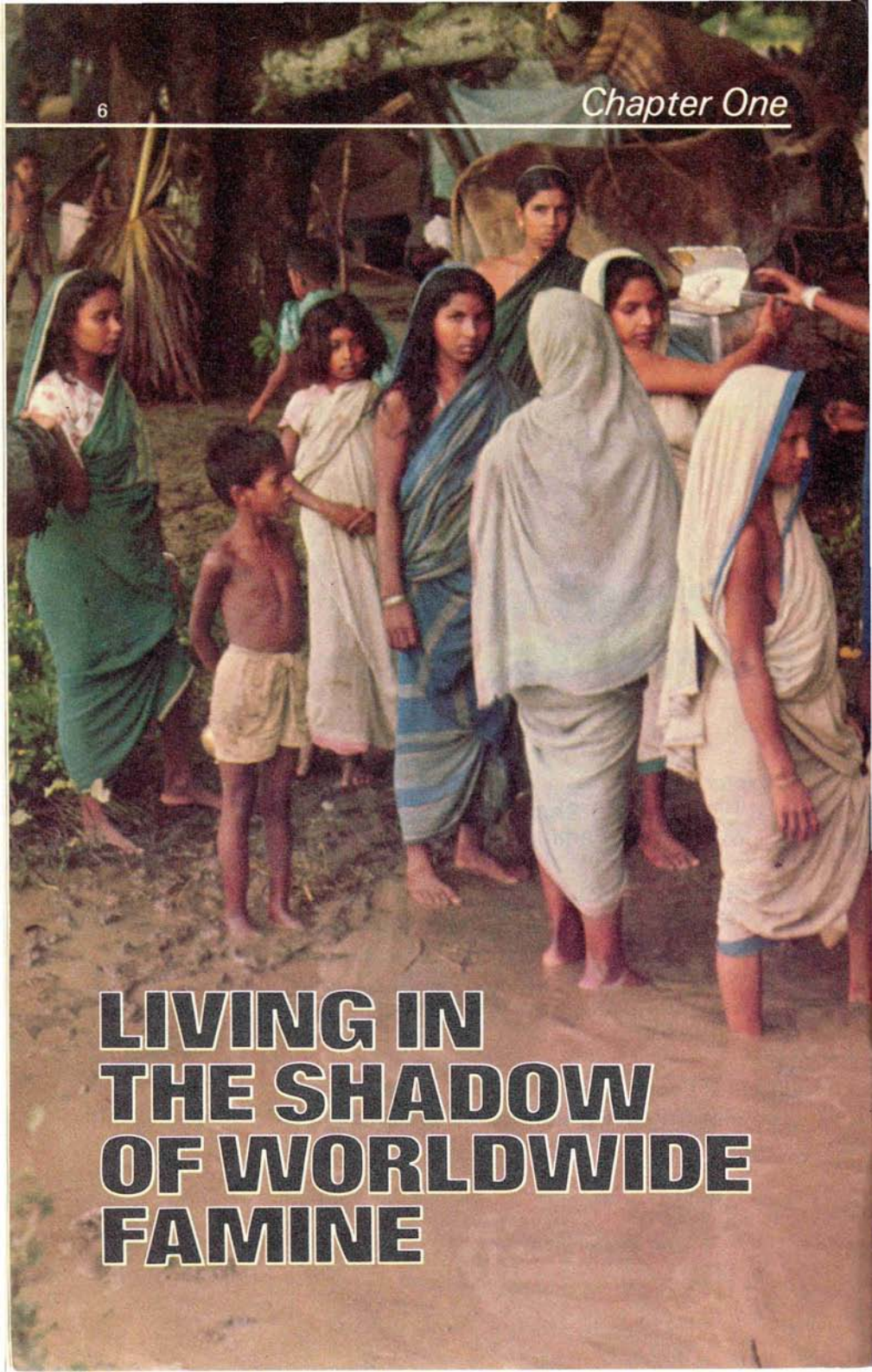
Table of Contents

Chapter One
Living in the Shadow of Worldwide Famine 6

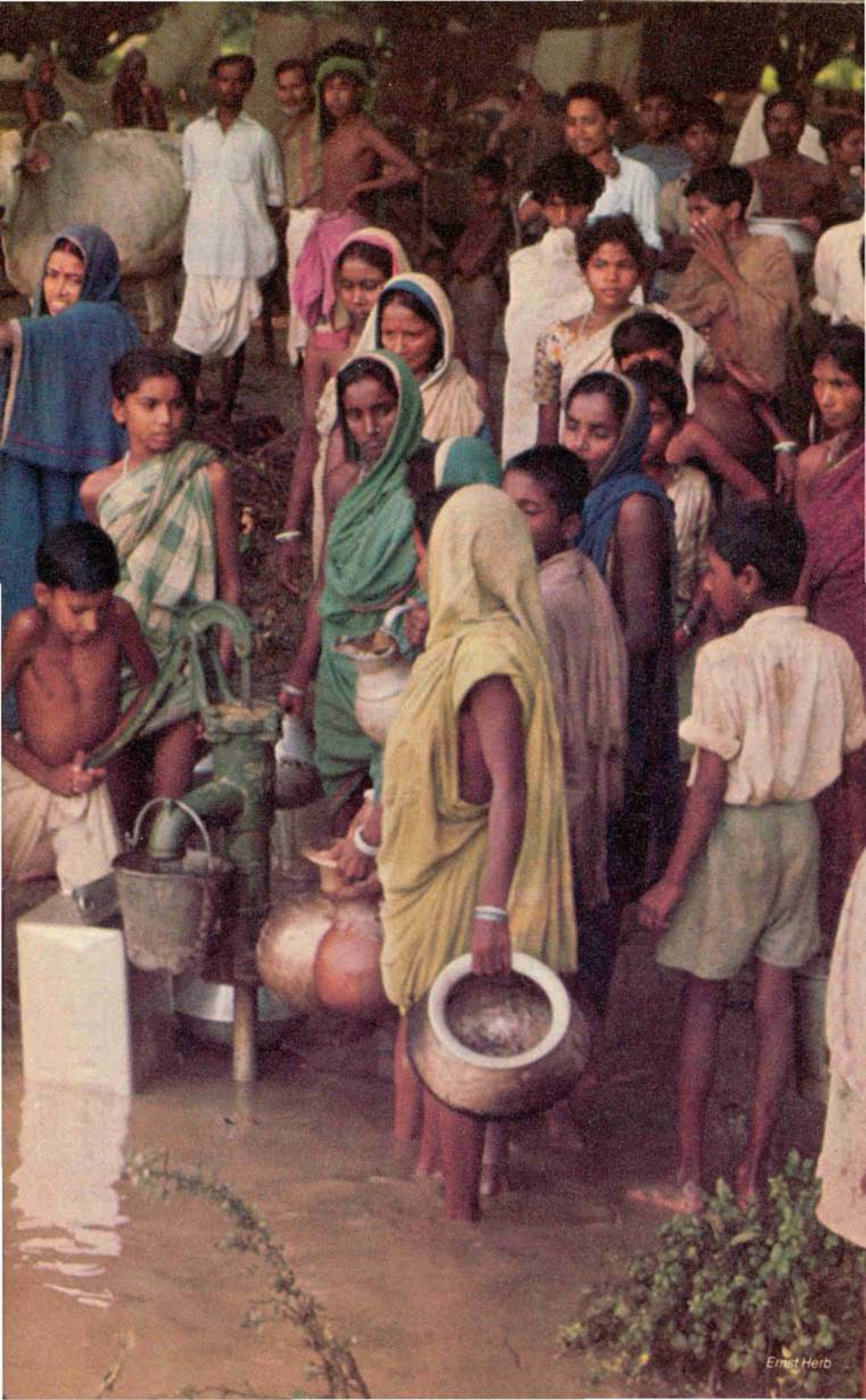
Chapter Two
The Ever-Widening Hunger Gap 17

Chapter Three
Balancing the Food-Population Equation 31

Chapter Four
Feeding the Black Horse of Famine 46



LIVING IN THE SHADOW OF WORLDWIDE FAMINE


Ernst Herb

To most of us living in Western society, it is hard to imagine that the world we live in is not really the real world. We get our three meals a day, rarely go to bed hungry, and only briefly and occasionally experience the meaning of the word "hunger."

We seldom think about the fact that we are a decided minority among the millions of people that inhabit this planet. So let's try and project ourselves into the real world of the hungry majority. Imagine for a moment what you would have to do in order to lower your standard of living to that "enjoyed" by the bulk of humanity.

First, in your mind's eye, throw out all your living room furniture: lamps, tables, television, couch and chairs. Next, smash your bedroom furniture, box spring, mattress, mirror, chest of drawers and clothes closet. Save only one change of clothes, your dirtiest work clothes. Next, destroy all the bathroom facilities entirely! As you move to your kitchen, disconnect and discard all those "energy slaves." Throw out your refrigerator, stove and dining room set. Discard all food on your shelves except for a few half-rotten potatoes and a few crusts of dried-up bread. Throw out daily protein staples, such as meat, milk, eggs and cheese.

Next, take your family safely away from your house and then burn your house down! Give away your automobile(s) and other motor vehicles, keeping perhaps an old rickety bicycle for personal transportation. If your garage is sufficiently small and shabby, it will be your new "house," but if it is a typical suburban two-car garage, it's too big. Tear it down and use a few of the boards to tack together a one-room lean-to shack in your backyard. Use cardboard liberally. Torn plastic sheets will lend a note of authenticity to your dwelling.

With all your possessions under your arm, move into that shack with all your children, pets and perhaps a few chickens and a pig.

The Hungry Majority

In this typical real world setting, lack of food goes right along with an almost total lack of material possessions. In this world — *our* world — an estimated 500 million people suffer

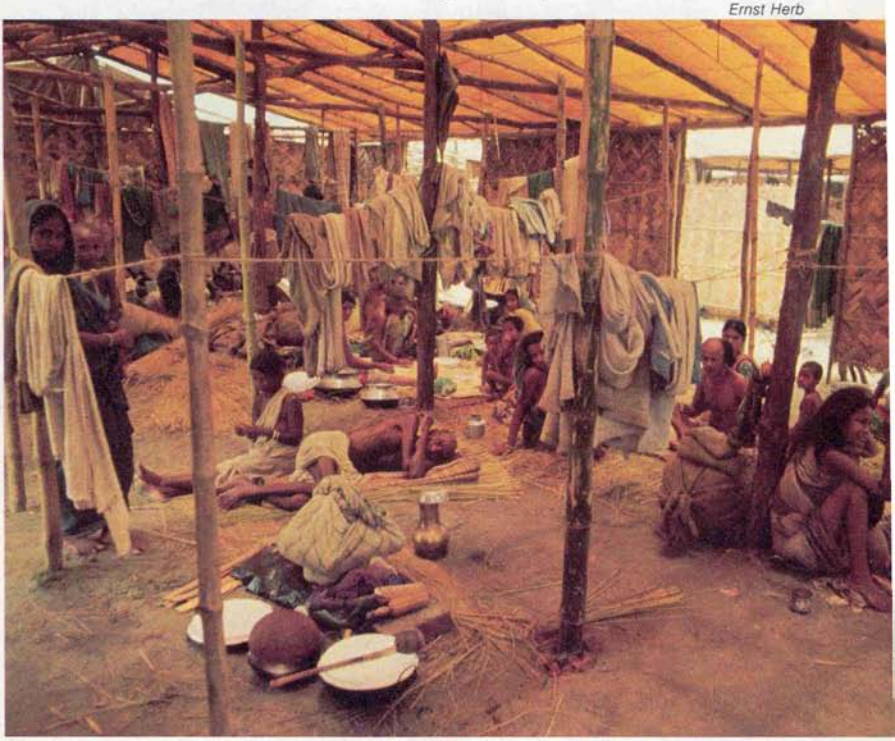
from some form of hunger or starvation. One out of four of their children will die from lack of adequate nutrition before reaching the age of five. Ten to twenty million of their numbers annually succumb to hunger or starvation-related diseases.

Less dramatic but more insidious are the effects of long-term malnutrition on these misery-laden millions. An estimated one and one half billion — or roughly one half the population of the Third World — suffer from some form of malnutrition. Three hundred million are children — most of them destined to remain virtual mental and physical cripples for the rest of their lives.

As if malnutrition and hunger weren't enough, vast segments of the Third World's populace also have to contend with a host of nutrition-related diseases. Typhus, dysentery, cholera and gastroenteritis are high on the list. A person fortunate enough to escape these

FAMINE *takes its toll. Victims seek help in this Pakistani refugee camp.*

Ernst Herb





may still end up crippled from beriberi, rickets, pellagra, or goiter. And he also stands a good chance of going blind like one million of his contemporaries living in India.

For people living in such a weakened state, any kind of sickness can be a life-and-death matter. A case of the measles or even the common cold can easily turn out to be a killer.

The have-not peoples of the earth are also continually at the mercy of the elements. Late in 1974, for example, one million were threatened by floods in Bangladesh. Another 800,000 living in Ethiopia and Central Africa were faced with the problem of drought. Close to 300,000 people in both these areas are estimated to have died from lack of food during the preceding months. This is roughly equal to the number of Americans that died during World War II.

A Hand-to-Mouth Existence

Despite the Green Revolution, so-called "miracle" foods, intensive harvesting of the sea, and vastly increased use of land, water and fertilizer, most of the human race continues to suffer from hunger. In viewing the world food situation, Robert McNamara, president of the World Bank, was moved to write: "One half of humanity is hungering at this very moment. There is less food per person on the planet today than there was thirty years ago in the midst of a worldwide depression. Thousands of human beings will die today, as they die every day, of sheer hunger" (*One Hundred Countries, Two Billion People,* p. 33).

Addeke H. Boerma, director-general of the UN Food and Agricultural Organization, likewise voiced his concern: "The sight of small children ... pitifully clinging to life, surrounded by dead bodies, gives one an angry sense that we are still too far away from the frightening reality of hunger and malnutrition which millions of persons suffer day after day while diplomats ... talk far into the night" (UPI, December 23, 1974).

Boerma's concern is certainly well-founded. World grain reserves have plummeted from a 95-day supply in 1961 to a current all-time low of 26 days. In effect, the world is staking everything on each year's grain harvest — most of which now comes from the wheat and soy-

(Continued on page 14)

THE REAL WORLD. *An estimated 500 million people suffer from some form of hunger.*

Ernst Herb



Basil Wolverton

Famines of the Past

Historical famines are, by definition, "cyclical famines," meaning that they are caused by unusual weather conditions, plagues, animal or insect infestation or a similar interruption of normal cycles. These cyclical famines are far different from the "structural famines" which the bulk of mankind is experiencing today.

Even righteous Abraham suffered temporarily from such cyclical famines (Gen. 12:10). When Canaan's rains failed, he went to Egypt for food. In the days of his great-grandson Joseph, the rains and rivers everywhere failed (illustration above) for seven years, "and the famine was over all the face of the earth" (Gen. 41:56).

The historical books of the Bible speak frequently of "a famine in the days of David," "a sore famine in Samaria," or a "great famine was throughout the land" (II Sam. 21:1; I Kings 18:2; Luke 4:25). One very graphic incident is described in II Kings 6:25-29: "There was a great famine in Samaria: and, behold, they besieged it, until an ass's head was sold for fourscore pieces of silver [about $50], and

the fourth part of a cab [a pint] of dove's dung for five pieces of silver [about $3]."

Famines in the Dark Ages: Between A.D. 1050 and 1350, severe famines struck all known lands, becoming especially severe in Egypt around A.D. 1065 and 1200, England around A.D. 1314, and all of Europe during the so-called "Black Death" of the 1350s.

Around 1065, the combined ravages of war and drought caused a famine in Egypt which must have rivaled in severity the seven-year famine under Joseph, approximately 2800 years previous. During the famine of 1065, a single cake of bread sold for about $40 (modern equivalent), eggs $30 a dozen, and a bushel of grain for more than $50. One woman, according to a historian of the time, gave a necklace worth thousands of dollars for a mere handful of flour. Others flung their jewels into the street.

Finally, the desperate Egyptians resorted to cannibalism. Butchers of men actually "fished" for their victims, letting down ropes attached to meat hooks in search of unwary pedestrians. After the shrieking victims were "hooked" and cooked, they were sold on the open market to the most desperate of Egypt's hungered masses.

In the England of Edward II, a great famine struck in 1314 as a kind of prelude to the upcoming "Black Death." Food was so scarce that even the king had a hard time securing food for his table. Men ate dogs, horses, cars, and tragically, human babies as well. Thieves and cannibals were arrested, but when a new criminal was thrown into jail, he was quickly seized upon by the starving inmates and literally torn to pieces for food.

Famines Since 1845: In 1845, the entire potato crop in Ireland rotted from an unexpected blight. Ireland was as dependent on potatoes as many Asian nations are now dependent on rice as a main staple of life. The hunger was so severe that the death toll in Ireland was between 200,000 and 300,000. A greater number emigrated to England and America, while thousands of others died on board the emigrant ships. Ireland, a great nation of 8.3 million people in 1845, lost 2 million people to death and emigration in just five years. Even today Ireland has but one half of her peak population of 1845.

China is another land in which periodic famines strike unexpectedly. Severe famines in 1906 and 1911 were caused by the flooding Yangtze River basin. Russia has also suffered much from famines in recent history. The war-caused famine in Leningrad killed more people by starvation than the United States has lost in all its wars.

bean fields of the United States and Canada.

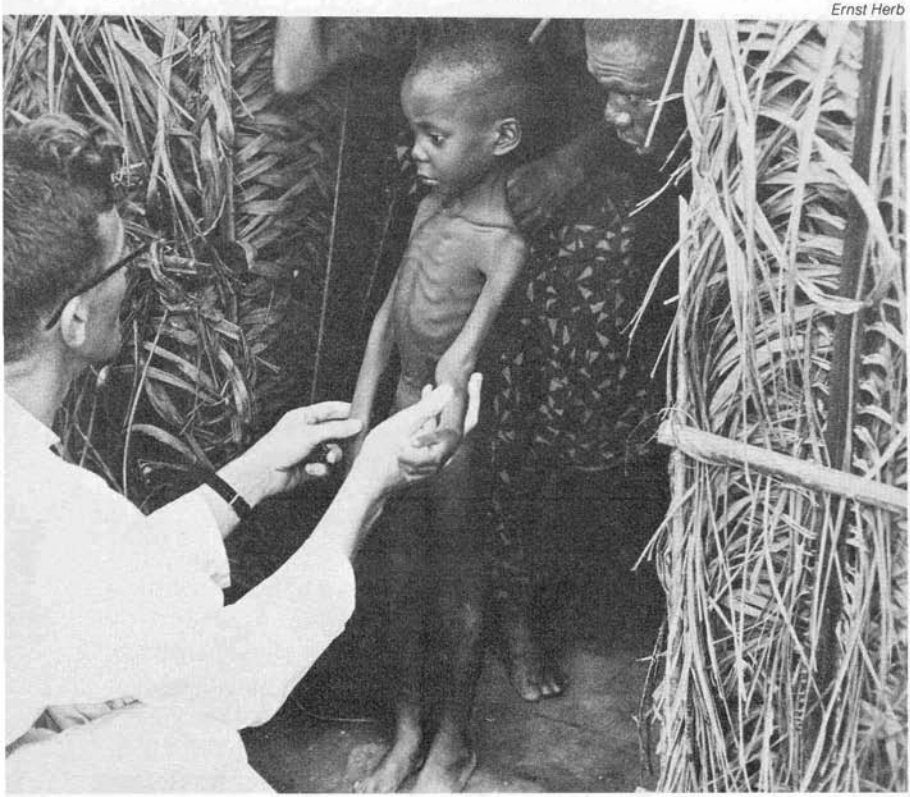
And from the standpoint of recent weather trends, this could turn out to be a risky venture. Leading climatologists warn that even the United States may be headed for tough years if certain adverse weather cycles of the past are repeated.

"The evidence is now abundantly clear that the climate of the earth is changing in a direction that is not promising in terms of our ability to feed the world," says Reid Bryson, noted University of Wisconsin climatologist.

With world food supplies so precarious, "even a mild drought in the Great Plains could be a disaster," adds a U.S. agricultural official.

According to the second report submitted to the Club of

Ernst Herb



***FAMINE** takes its toll. The effects of malnutrition are most severe in children and can often last a lifetime.*

Rome, this means: "The hungry majority of the world [now] lives under a veritable sword of Damocles, that will drop and kill millions whenever that harvest fails" (*Mankind at the Turning Point,* p. 165).

It's no wonder that Dr. Raymond Ewell, a leading fertilizer expert from the State University of New York, called the world food crisis "the biggest, most fundamental, and most nearly insoluble problem that has ever faced the human race."

Dr. James Bonner of the California Institute of Technology said: "All responsible investigators agree that the tragedy will occur. They differ only as to whether it will take place in ten years or less, or ten years and a little more."

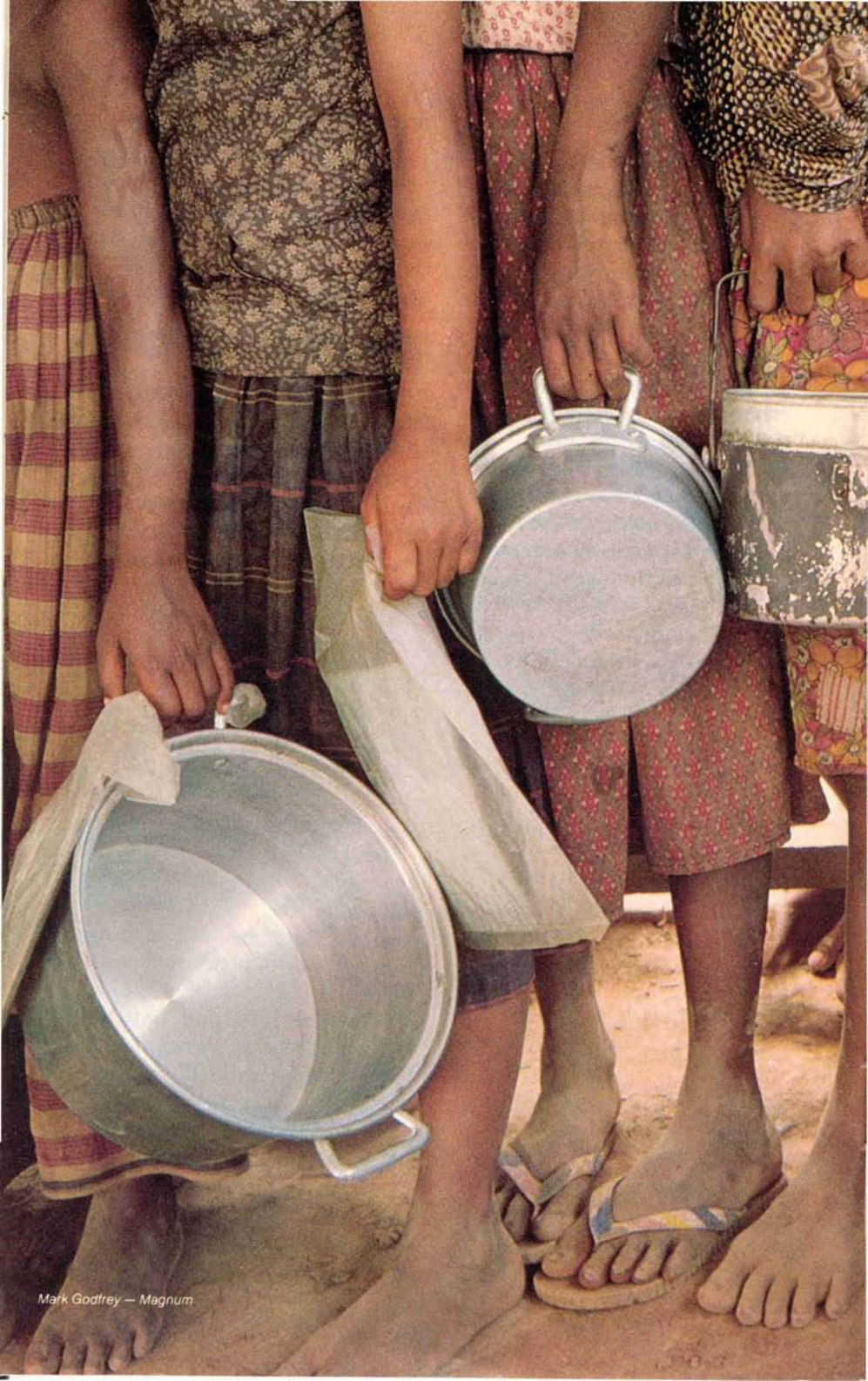
Former U.S. Secretary of Agriculture Orville L. Freeman warned that if the world food problem is not solved, "The world of the year 2000 will be a grim, sullen, hate-filled planet teetering on the brink of self-destruction.... [with] insurrection and toppling of governments, then final desperate international aggression." Robert Heilbroner, in his book *The Human Prospect,* spoke of possible future "wars of redistribution" or "pre-emptive seizure" reminiscent of Japan's actions at the outset of World War II.

And Dr. Robert H. White-Stevens echoed these sentiments when he stated: "Famine can be expected to emerge as the paramount force by 1975 and continue to a point now totally unpredictable where human society could fragment into total chaos on a global basis."

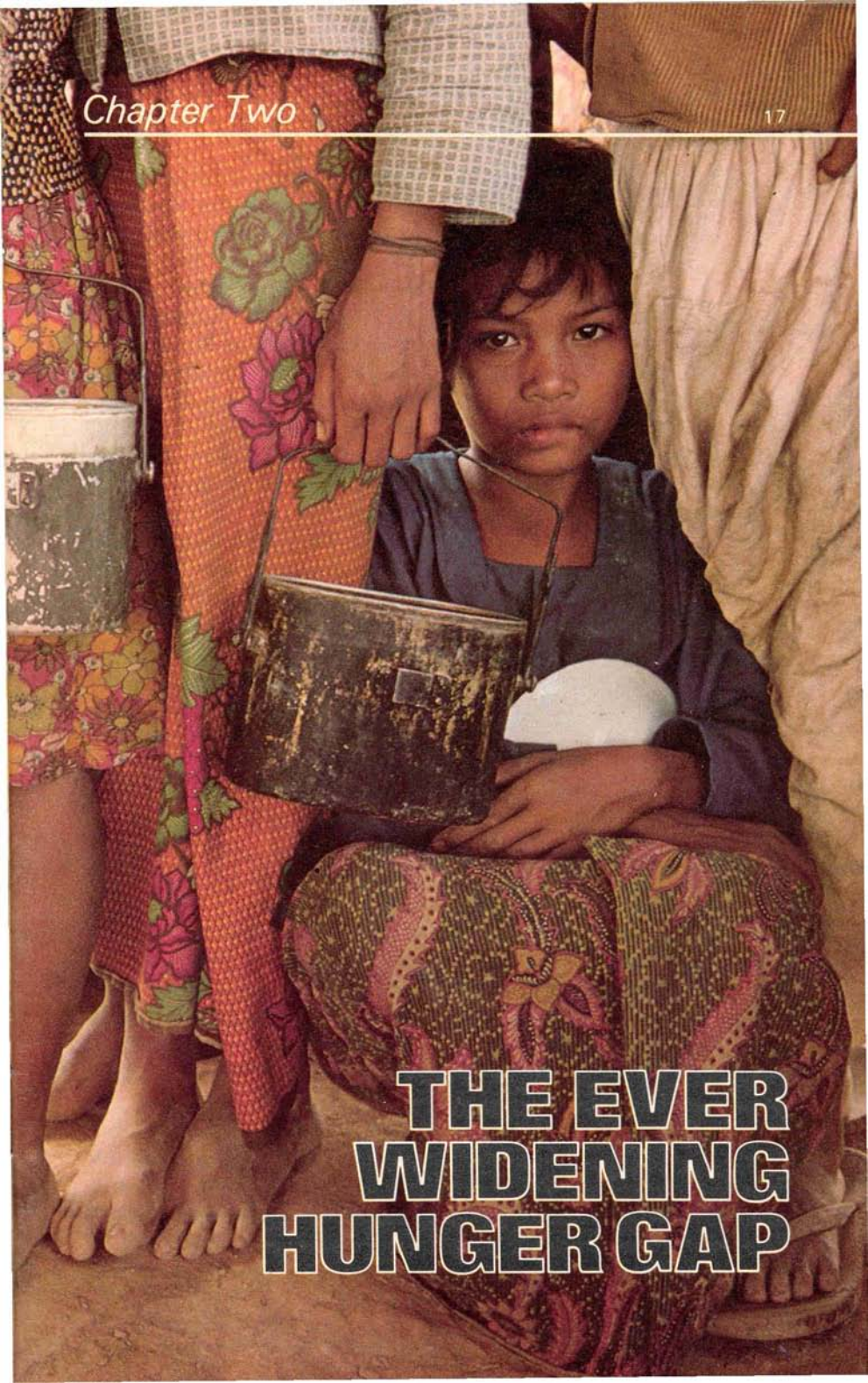
Less dramatic but more insidious are the effects of long-term malnutrition on these misery-laden millions. An estimated one and one half billion — or roughly one half the population of the Third World — suffer from some form of malnutrition.

Can the human race survive what is perhaps to date the biggest challenge it has ever faced? Will the world be able to provide food for its future billions? Or will it descend into a new dark age as men and nations struggle to control what could turn out to be a steadily diminishing per capita food supply?

Before we discuss these questions, we should first focus on one of the key factors behind current world food shortages — the population explosion.



Mark Godfrey — Magnum



THE EVER WIDENING HUNGER GAP

While millions suffer from hunger and malnutrition, the other half of the food-population equation continues its monotonous, inexorable, silent explosion. Each year, world population grows by slightly under two percent. This means a total of 60 to 70 million new mouths to feed each year.

This silent population explosion operates like this: every second, four new babies are born (three of them in the extremely poor nations), while only two persons die (one of them being a malnourished child under age five). The net increase is a fraction over two more people each second. This seemingly small number multiplies to 200,000 new lives daily (the size of a small city), 1½ million each week (a large city), and 75 million yearly (a large nation). This means that each year the world adds a Bangladesh in population, or a Mexico and Canada combined.

It is hard to imagine a steady two-percent-per-year growth as being an "explosion" of people, so look instead at population's doubling rate. World population, it is estimated, was practically stable from the birth of Christ until A.D. 1650. Give or take a hundred million lives (during the Crusades, the Bubonic Plague and other eras of high death rates), population remained at one-half billion (500,000,000).

From 1650 to 1850, however, world population doubled to one billion. By 1930, eighty years later, population doubled again to two billion. By 1975, population doubled again to four billion. It is obvious from this historical curve that the doubling time of population is rapidly shrinking. It took 200 years for the first doubling, then 80 years, then only 45. Demographers (those who study population) tell us that population's doubling rate is now down to 35 years. In other words, at present growth rates the world will double its population again to 8 billion by the year 2010. Thereafter, doubling times may continue to shrink even further, down to a practical biological limit of about 20 years.

Now you can see why population is "exploding." Even if the doubling time remained at its present rate of 35 years, the world would theoretically have 130 trillion people by the year 2500, or over

3,000 people per acre! That's not even a decent burial plot, much less living room.

Realistically, however, this kind of "people pollution" cannot continue until the year 2000, much less the year 2500. The "explosion" must be defused, either by universal birth control or by war, famine and disease epidemics.

These dire warnings are not just a vision out of the Four Horsemen of the Apocalypse, or a contemporary doomsday ecologist. Nearly 200 years ago, when the world was sparsely populated with its first billion people, a mild-spoken British minister and economist, Thomas Malthus, foresaw the overpopulation predicament facing world leaders of the late twentieth century.



Jean Marie Versteege

AT WELFARE CENTER *in India. India's population is shortly projected to pass one billion.*

Malthus' "Principle of Population"

The Bible speaks of overpopulation and famine. Plato and Aristotle likewise had warned against overpopulation 2000 years before Malthus. Even the generation immediately prior to Malthus witnessed the warning of Adam Smith, David Hume and Benjamin Franklin regarding the dangers of surplus people. Why then the furor over Malthus?

It was not the ideas of Malthus as much as his pessimistic application of those ideas that outraged his contemporaries. His 1798 *Essay on the Principle of Population* persuaded Prime Minister William Pitt to rescind his Poor Bill Law, which would have allowed relief to poor Britons in proportion to their number of children. Here was Malthus, a minister, arguing against financial support



of the poor. You can almost hear the congregations: "He's quit preaching and started meddling." He alienated the rich and poor alike by his stand.

Malthus summarized his point mathematically: "Population when unchecked increases in a geometrical ratio. Subsistence [food] increases only in an arithmetical ratio . . . the human species would increase in the ratio of 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, etc., and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, etc. In two centuries and a quarter [at a doubling rate of 25 years, at which rate young America was growing], the population would be to the means of subsistence as 512 to 10: in three centuries as 4096 to 13. . . ."

Malthus was widely criticized as a pessimist — and the new field of study called *economics* was labeled as the "dismal science," because Malthus foresaw that the only possible way to halt population was by death through famine, disease and war. He saw depopulation by moral restraint, late marriage or total sexual abstinence as unlikely if not impossible.

The critics of Malthus offered three optimistic "panaceas" in an attempt to avoid the horrible future Malthus described. First, they contended, food is not really limited to arithmetical increase. Technology would provide more foods and new kinds of food as population demanded it. Fish could be "farmed," common grass and seaweed could be processed or even "an infinite number of meals [could] be extracted from the air" (?!).

The second optimistic remedy was birth control through technological devices, rather than through the commonly practiced negative means of abortion and abstinence. Advocates of mechanistic birth control pointed to France as an example, a nation which stabilized its population and increased its standard of living for 25 years (1841-1866).

The third answer was economic development, the panacea of flooding poor nations and poor people with the necessary money and materials to overcome their reliance on sheer tribal manpower (multiple children). Strangely, after nearly two centuries of constant promulgation and increased practice of all three of these panaceas — technology, birth control and economic de-

(Continued on page 24)

VISIBLE EVIDENCE *of the silent explosion. In many countries the median age is 19 years.*

Ernst Herb



Ernst Herb

The High Cost of Feeding the Poor

"How do you feed a hungry world?" is the question posed by many these days. According to some, the answer is simple. Let the rich eat less so the poor can have more. Whatever the rich don't buy can be easily sold to the poor.

It all sounds beautiful in theory, but there is one basic problem in practice — money. Within the last few years most of the poorer nations of the world have been priced right out of the food market. The reasons aren't hard to find. Fuel prices in the wake of the Arab oil embargo quadrupled. The price of urea fertilizer jumped from $90 a ton in 1973 to $350 in 1974. Wheat went from under $2 a bushel to over $5. And rice prices registered similar increases.

India, for example, found combined costs for fuel, food and fertilizer imports due to price increases alone up 1.4 billion dollars in 1974. Import costs for Bangladesh, another sizable importer, tripled.

Total cost of fertilizer imports for the poorer nations of Southern Asia jumped from $1.6 billion to $5.4 billion. With per capita incomes running around $150 a year, with little in the way of exportable resources, and with limited foreign exchange, the nations of the Fourth World had no choice but to cut back on these vital imports.

Lester R. Brown, a leading expert on food problems in the Third World, explained what these price increases meant to the average "man on the street." "When one spends about 80 precent of one's income on food, as does a sizable segment of mankind, a doubling in the price of wheat or rice cannot possibly be offset by increased expenditures. It can only drive a subsistence diet below the survival level" (*In the Human Interest,* p. 55).

James P. Grant, president of the Overseas Development Council, added this comment: "Five-dollars-a-bushel wheat . . . over a long period of time does mean that really tens of millions of people are going to die an earlier death by malnutrition."

The outlook for the future is every bit as bleak. By 1985 it will take $17 billion worth of grain just to satisfy the projected cereal import requirements of the developing nations. The capital outlays required will also be nothing short of staggering. Future increases in grain production will require substantial additions to the amount of arable land now under cultivation. But with most of the good land already under the plow, farmers will have to turn to marginal acreage to help bridge the world's growing hunger gap.

Taking the extremely conservative figure of $400 an acre to open up new farmland, Dr. Paul Ehrlich calculated that "the world would have to invest $28 billion per year simply to . . . feed the people now being added to the population annually" (*Population, Resources, and Environment,* p. 92).

Nor is the picture for future fertilizer production any better. By century's end, world production will have to increase fourfold to keep pace with projected population growth. India will have to build 2½ fertilizer plants *every year,* the Philippines, one every four years.

Raymond Ewell, an authority on world fertilizer problems, estimated that investments of $8 billion a year in new plant facilities would be required just to keep up with these projected demands. By 1980 this figure is expected to jump to $12 billion, or roughly three times the present level of investment.

Rather than ask "How do you feed the hungry world?" perhaps we ought to ask, "Is such a thing financially possible?"

velopment — we can see in retrospect that Malthus — and not his critics — was accurate in his pessimistic prophecy.

As technology increased, it only helped to push death rates lower. The more people were rescued from poverty and early death, the faster the population exploded.

As Death Rates Plummet

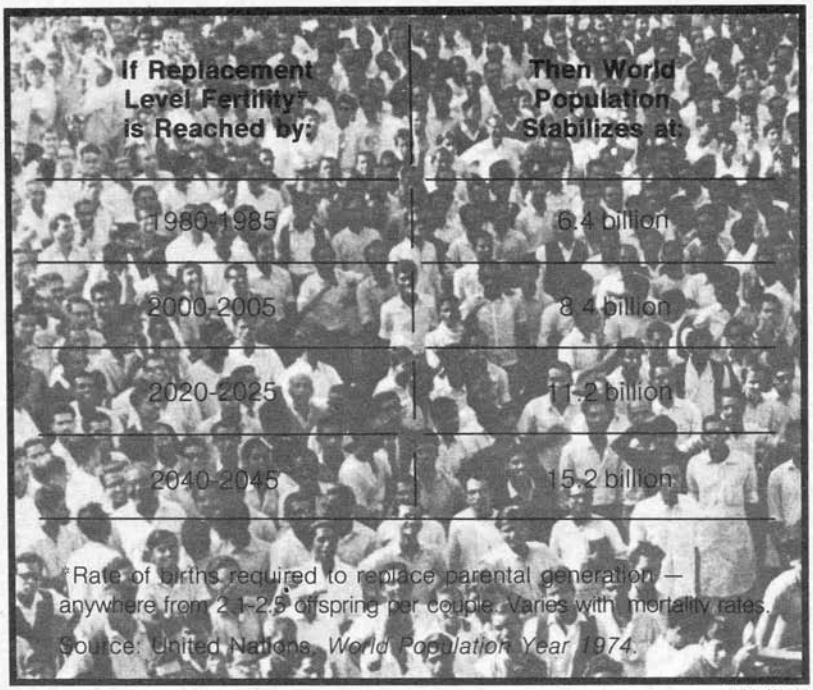
The major cause of the recent surge in the population explosion is the development of world health programs and chemical breakthroughs which protect the world's poor from early death. Shocking as it sounds, people aren't dying fast enough!

The post-World War II use of DDT to kill malaria-carrying mosquitoes has drastically lowered the death rate in many underdeveloped areas. Better sanitation and medical facilities have also aided the dramatic cutting in half of death rates in most poor nations. In many such nations, including India, life expectancy has almost doubled — from a 29-year life expectancy in 1940 to a 55-year expectancy today. One billion people on earth today owe their existence, directly or indirectly, to DDT and other chemicals.

Even if the doubling time remained at its present rate of 35 years, the world would theoretically have 130 trillion people by the year 2500.

The Malthusian "check" of infant mortality, early death, disease, war and starvation no longer works in many of the developing countries. Take for instance the semi-developed lands of Northern Africa. Most have maintained a fairly steady birthrate of roughly 4-5 percent, but their death rate has dropped to 1.6 percent or 1.7 percent, in all six lands of Northern Africa (Algeria, Egypt, Libya, Morocco, Sudan and Tunisia). Instead of an average 2 percent net growth, some of these nations are exploding at over 3 percent per year. Morocco and Algeria double their population every 21 years, as compared to roughly a 35-year doubling time for the world as a whole.

The death rate decline is even more severe in Latin America, the continent with the greatest percentage of population growth. Death rates in some Latin American nations have dipped to less than one percent! Typical of these exploding nations is Venezuela, with a birth



Wide World

rate of over 4 percent and a death rate of 0.8 percent.

An Ever-Growing Juggernaut

In effect, the lid has blown completely off natural population checks in the developing nations. Their growth potential for the future is staggering, both in terms of number and rate of growth. A United Nations study on population recently warned: "Many developing countries may *quadruple* in population within 50 years if they do not move toward the goal of a reduced growth rate" (*World Population: The Task Ahead,* p. 11).

By the turn of the century, India's population will hit the one billion mark unless drastic measures are quickly taken. The Philippines will mushroom from 42 to nearly 100 million souls. During the latter part of the next century, Indonesia will be teeming with 1½ billion people at her present growth rates. If present trends continue, three quarters of the earth's population will come from the underdeveloped nations by the time the 21st century dawns.

(Continued on page 28)



Dave Conn — AC Photo

An Ominous Shift in the World's Weather Patterns

There's been a change in the weather — and from all indications it may put a big damper on man's efforts to feed the earth's hungry billions.

Over the last few decades, climatologists have noticed a marked cooling trend emerging from their masses of meteorological data. Temperatures peaked around 1945 and have been dropping ever since. The favorable weather period we have just lived through "has been the most abnormal of the last thousand years," says Reid Bryson, a noted meteorologist from the University of Wisconsin.

Some scientists now suspect that the earth may be on the way back to a "mini ice age" like the one that lasted from the late Middle Ages till the beginning of this century. The signs of this advancing global cold front are widespread. In 1972 and 1975, cooler weather was the major culprit behind the Soviet Union's devastating crop failures. Growing pack ice around Iceland has made life a little more difficult for local fishermen. England has lost 9 days from her growing season since the early 1950s. And during the winter of 1971-1972, scientists noted a 12% increase in the size of the Arctic ice cap.

This cooling of the earth's climate has also prevented moisture-

laden equatorial air from reaching the badly parched African sub-Sahara region. The extended drought that followed was responsible for the massive famines that occurred there in the early 1970s. The resultant "brown belt" that was created now cuts a sizable swath through Africa, the Middle East, India and Northern China.

With world grain reserves dropping to record low levels, a good harvest every year has become a virtual imperative. That means optimum weather will be essential if humanity expects to even stay in the ball park and play its losing food-population game. In this respect man's technological improvements could turn out to be a curse as well as a blessing. New genetic crop strains developed by the Green Revolution are much more susceptible to climatic variations. Optimum combinations of water and temperature are required to maintain their increased yields. And much of the credit for these tremendous yield increases over the last 15 years should be attributed to optimum weather conditions, according to John McQuigg, a leading government climatologist at the University of Missouri. "The probability of getting another fifteen consecutive years that good is about one in 10,000," McQuigg says.

Reid Bryson echoes McQuigg's forebodings: "There is very important climatic change going on right now. And it's not merely something of academic interest. It is something that, if it continues, will affect the whole human occupation of the earth — like a billion people starving. The effects are already showing up in rather drastic ways." Bryson feels that the life-giving monsoons that have so far provided marginal subsistence to many areas of the third and fourth world may not return with any sort of regularity during the rest of the century. "If he [Bryson] is correct," according to *Fortune* magazine, "there would seem to be scant prospect that even the present populations of the monsoon belts can be maintained, even if all the arable land in the rest of the world were placed in full production for this purpose."

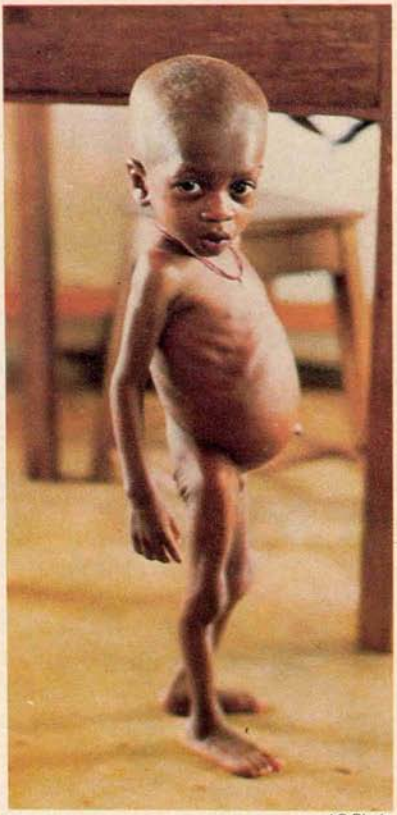
Even relatively minor climatic changes could easily tip the present precarious food-population balance in the wrong direction. "It will not take an apocalyptic climatic event such as the onset of a new ice age to bring great human suffering from famine," says Henry Lansford of the National Center for Atmospheric Research. And the chances of this occurring may not be all that remote. According to Lansford, "The climate trends that some scientists are predicting could bring us to a point of catastrophic consequences between the increasing population and inadequate food supplies much sooner than many people expect."

The chances of stemming this growing tide of humanity register somewhere between slim and none. Assuming for a moment the miraculous happened and that the number of children born to every woman in the world was instantaneously cut in half (this would roughly approximate what it would take to achieve replacement level fertility), zero population growth would not be achieved until the end of the century! World population would continue to grow until it hit the 5.7 billion mark.

Being a little more realistic, let's assume that by the end of the century every woman in the world was bearing children at replacement level. World population would still reach the 6 billion mark by this time and would not stabilize until it doubled the present level of 4 billion.

However, even assuming this much is being generous. According to a report issued by the World Bank on population planning: "To reach a NRR [net reproduction rate] of 1.0 [replacement level fertility] by the year 2000 *would require a maximum effort, something it is probably not realistic to expect*" (World Bank, *Population Planning,* March 1972, p. 11).

Part of the problem stems from the structure of the population itself. In many underdeveloped countries, 40% of the populace is under 15 years of age. Median age is around 19 compared to that of 31 in the developed countries. This means record numbers of women will be coming into



AC Photo

THIS BIAFRAN CHILD, *photographed during the civil war in Nigeria, shows some of the classic symptoms of starvation.*

their peak childbearing years in the next few decades. Consequently, populations in developing countries will continue to swell for some time to come even if fertility rates drop. The U.S. Population Reference Bureau summed up this situation as follows: "In order to achieve a nongrowing population, even in most of the more developed countries fertility would have to decline significantly below the replacement level. In the less developed countries *such a situation seems inconceivable during the coming 50 years . . .*" (*World Population Projections: Alternative Paths to Zero Growth,* p. 26).

An Insatiable Global Appetite

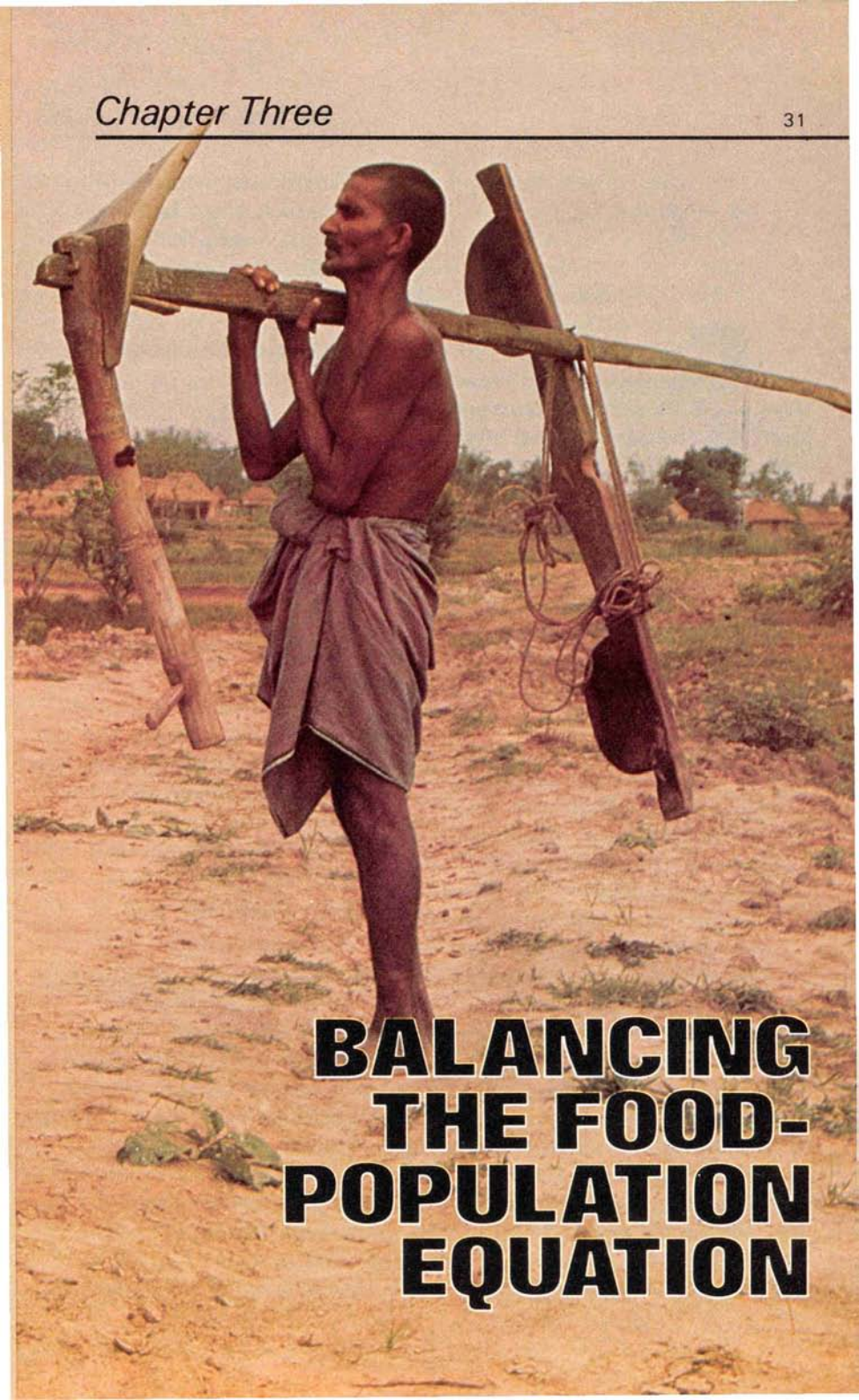
Future food requirements for this growing mass of humanity are nothing short of mind boggling. To accommodate projected population increases, world cereal production will have to increase 43 percent over present levels by 1985. And this will merely perpetuate present marginal levels of malnutrition that exist in the poorer parts of the world.

Georg Borgstrom, professor of Food Science at Michigan State University, estimates that a doubling of current food production is needed just to bring the present world's population up to an adequate dietary level. If we consider the rather conservative figure of 6 billion people who are expected to be alive at the turn of the century, then, according to Borgstrom: "Food production four times *the present level* is required" (*Focal Points,* p. 240).

Lester Brown, another leading food authority, had this to say: "If . . . we accept the UN medium projection of a population of 6.5 billion by the end of the century, and if we assume an average global food-consumption level approximating that currently prevailing in Western Europe . . . we can project a need for . . . roughly 2.5 times current [grain] output, by the year 2000. World population growth alone — *with no increase in per capita food intake* — would require an increase of nearly one billion tons of grain per year, or *roughly four times the current production of North America*" (*By Bread Alone,* p. 44).

Can this giant step in food production be taken for humanity in time? That question will be discussed in the next chapter.


Ernst Herb



BALANCING THE FOOD-POPULATION EQUATION

Can the human race save itself from mass starvation? Ask the question and you will probably get a variety of answers. While some might see the rapid rise in the world's population as cause for alarm, others view the situation with more equanimity. "After all," they might reason, "we've had famines before. Science and technology will come to our rescue. Never fear, the earth's food-producing capacity is virtually unlimited. We can feed multiple billions if we only get about the business of diligently applying the principles of 20th-century technology to the ancient art of food production."

Often proponents of this type of technological solution cite with some satisfaction the achievements of the Green Revolution as an example of what can be done. "Given the Green Revolution and a few other technological breakthroughs, world food production will rise to meet the needs of humanity," they might say.

But will it?

Proponents of the technological solution sometimes tend to overlook a few limiting factors in the food-population equation. One of them is available land.

A Growing Scarcity of Choice Real Estate

Much of the land in the world is unsuitable for farming — too precipitous, rugged and mountainous — and the soil is too poor. Only 5 percent of Canada's land surface is suitable for farming. One percent of Australia is cropland; only two percent of Brazil; and ten percent of China.

High hopes have been held out for the vast Amazon Basin, but most of them have turned out to be illusory. Only about 200 of its over one million square miles are suitable for cultivation. Unfortunately, equatorial soil fertility is low — most of it is laterite, a poor reddish soil leached of its quality by the heavy rainfalls of the region. Too little is known about how to improve tropical soils; how to develop strong plants to resist the virulent tropical plant diseases and insect attacks.

Even at best, the resources of the Amazon Basin are extremely limited when compared to burgeoning world food de-

mand. According to Lester Brown: "Many view the vast interior of Brazil as a potential source of almost unlimited food production, but available soil maps show only a very small percentage of arable land in the Brazilian interior. The fact is that even if Brazil were to double its food output, the resulting increase would not equal even one year's growth in world demand" (*By Bread Alone,* p. 244).

Biologist Georg Borgstrom calculates that whatever potential land reserves are left will only provide for a brief 15 years' worth of world population growth. And most of this real estate will require immense amounts of capital to bring up to productive standards. According to the recent *Limits to Growth* study: "The remaining land will require immense capital inputs to reach, clear, irrigate, or fertilize before it is ready to produce food. Recent costs of developing new land have ranged from $215 to $5,275 per hectare. Average cost for opening land in unsettled areas has been $1,150 per hectare. According to an FAO report, opening more land to cultivation is not economically feasible, even given the pressing need for food in the world today" (p. 48).

"We are in the throes of an apparently irreversible progressive reduction of the surface of cultivable lands. It is estimated that the area of such lands has decreased by 20 percent in the last hundred years."

Tenuous Top Soil

In addition, the world may soon find that it is actually "losing ground" in the race to increase its arable acreage. In some areas of the African Sahel, the Sahara desert is advancing southward at the rate of 30 miles a year. Thirty thousand badly needed acres are being lost annually in the Indian state of Rajasthan. And, according to J. H. Scott Watson in the *Agricultural Institute Review,* an average of 13 million acres is being lost to the world every year because of erosion. Every day 36,000 acres are lost.

Ironically, man's growing need for valuable croplands only serve to accelerate the process. Deforestation and overgrazing lead to wind erosion, flooding, climatic alterations

(Continued on page 35)

Population Control– A Global Imperative

Henry Kissinger: "It is clear that population cannot continue indefinitely to double every generation. At some point we will inevitably exceed the earth's capacity to sustain human life."

Former President John F. Kennedy: "If we do not stem this human tide now, we will all be inundated in an immense ocean of poverty."

Robert S. McNamara: "If there is one thing certain about the population explosion, it is this: If it is not dealt with reasonably, it will in fact explode — explode in suffering and violence."

Stewart L. Udall: "If the present rate of population increase continues indefinitely, most of the crucial problems that now confront the human race will simply become insoluble."

Norman E. Borlaug: "If the world population continues to increase at the same rate, we will destroy the species."

Lester R. Brown: "The signs are ominous. The urgency of checking population growth everywhere and of moving toward stability as rapidly as possible cannot be overemphasized."

Vannevar Bush: "The world's population is increasing at a rate which renders distress, famine and disintegration inevitable unless we learn to hold our numbers within reason. Man is headed for catastrophe unless he mends his ways and takes thought for the morrow."

Binay Sen, former director-general, UN Food and Agriculture Organization: "Either we take the fullest measures both to raise productivity and to stabilize population growth, or we face a disaster of unprecedented magnitude."

Rene Dumont, French agronomist: "If the population growth rate does not decline more rapidly, and if at the same time consumer habits and income distribution systems are not changed, total collapse will undoubtedly be inevitable."

and the inexorable advance of the deserts.

"Since 1882," according to biologist Georg Borgstrom, "the deserts have grown on an average of 25 million hectares [62.5 million acres] annually . . . The boundaries of both the Sahara and the Kalahari deserts are being pushed a couple of miles farther out each year, and this due to man's intervention" (*Too Many,* p. 296).

Sprawling cities, airports and housing developments have also taken their toll. In the United States, for example, some one-half million acres of valuable cropland are being gobbled up every year because of the urbanization process. "In short," wrote the distinguished Belgian botanist Raymond Bouilenne, "we are in the throes of an apparently irreversible progressive reduction of the surface of cultivable lands. It is estimated that the area of such lands on the earth has decreased by 20 percent in the last hundred years. Of the 40 billion acres remaining today, at least 20 million disappear irretrievably each year."

The Stunted Green Revolution

Advocates of the scientific cure-all method also overlook the fact that technology itself has its own limitations and shortcomings. One prominent case in point is the Green Revolution. Initially, the Green Revolution, as it came to be called, was sparked by the introduction of new high-yield "miracle" grains in poor nations such as the Philippines, Mexico, Sri Lanka and India. Dramatic increases in crop yields followed.

All the efforts of man — the new varieties of grain, harvesting the seas, developing new sources of protein from the oceans, etc. — only put off for a few more short years the final day of reckoning!

But this increased productivity also meant increased dependence on essentially artificial agricultural techniques. For instance, four to seven times more water is required per acre to achieve these copious crop yields. Unfortunately, the world is not exactly "swimming" when it comes to available freshwater supplies. The UN Food and Agricultural Organization has predicted that 60 nations will probably experience water shortages by the end of the decade even with no fur-



King Leopold Photo

RAPIDS *in the Uraricoera River, Brazil. The high hopes once held out for the Amazon Basin as a food-producing cornucopia have turned out to be illusory.*

ther increases in use of irrigation. And most of the earth's irrigation potential has already been tapped. According to Lester Brown: "The irrigation potential of most of the world's major rivers — including the Nile, Yellow, Indus, Ganges and Colorado — has largely been realized. Among those yet to be exploited are the Mekong and the Amazon. But the latter is an exceedingly difficult river to harness because of its vast width and broad flood plains" (*By Bread Alone,* p. 102).

Irrigation also has its detrimental ecological aspects. Millions of acres in Pakistan, Egypt, Greece and South America have been transformed into veritable salt deserts because of excessive use of irrigation techniques. Irrigated acres have also become a fertile breeding ground for parasitic diseases

such as malaria, schistosomiasis and river blindness.

The new hybrids of the Green Revolution were also high on quantity but low on quality. Fat and carbohydrate contents of the new grains rose, but protein levels dropped. Acres formerly planted in nutritious vegetables and beans were sacrificed in the push for higher grain yields.

The hybrid grains were also highly susceptible to insect pests and plant disease. This meant increased use of chemical pesticides and fertilizers were also necessary for their growth. The result was a dangerous trend toward crop uniformity which has plant geneticists frankly concerned. The Philippines tasted the fruits of the Green Revolution in 1971 when a virus disease called *tungro* played havoc with their hybrid rice. The U.S. corn crop of 1970 was likewise decimated because of the genetic uniformity factor.

Miracles From the Sea?

Many of the advocates of the technological solution have also held out great hopes for the oceans as a future source of man's food. But the seas are already showing signs of being overworked. In spite of the many advances in ocean fishing techniques, world fish catches have declined in the last few years. Intensive overfishing has largely been to blame. Declining stock of cod, herring and haddock in the North Atlantic are expected to take years to return to normal.

In this regard, technology often "giveth and taketh away." Modern fish-pumping techniques produced bumper harvests of anchovy off the Peruvian Coast from 1969 to 1971. But subsequently this lucrative fishery, which at one time accounted for one fifth of the world's production, collapsed. Experts now feel the disappearance of the anchovies may be more than a passing phenomenon.

Fish farming is another food-producing area for which there is more hope than substance. To produce fish on a mass-production basis is an enormously expensive process. Food chains in the ocean are longer and more involved than their counterparts on the land. To raise a one-hundred-pound tuna requires the equivalent of 250 tons of phytoplankton!

For the same reason, harvesting plankton from the sea offers no real hope of feeding the world's growing millions. In order to extract enough plankton to equal the nutritional equiva-

lent of a pound of beans, a man-made plankton gatherer would have to strain the equivalent of fifteen one-story houses full of water. In very rich areas of the ocean like the Gulf of Maine, or the North Sea, some 5000 tons of strained water would yield only 10 pounds of plankton!

Flour of the Sea — FPC

Other experiments in food production from the sea have included the development of FPC, or fish protein concentrate, lauded to be a solution for part of the world's hunger problem. Tasteless, without smell, it looks much like ordinary wheat flour.

It can be made from just about any kind of sea life — fish, shellfish, shrimp, krill, etc. The whole animal is thrown into a chemical and electrical processor which purifies and processes the mass into a white powder. This powder would be rich in raw protein for nations with starving populations.

But if the total world sea catch could be evenly distributed as FPC, it would be only an ounce or so per person per day. Even then, experience has shown that ground fish can't even be given away to the hungry people in need, due to acquired tastes and religious taboos.

Solace From Soybeans?

Soybeans have also been looked to as another palliative to the world's protein problem. Currently some 90% of the non-exported U.S. crop is used for animal feed.

The idea would be to divert soybeans from use as an animal feed to direct human consumption. While this would undoubtedly go a long way toward closing the world's protein gap, it still would not satisfy current needs. In 1965 one authority estimated that even if the world's entire oil seed crop were utilized in this manner it would only fulfill about one half of the earth's protein deficiency (*World Protein Resources,* p. 63). And protein needs have been growing ever since.

Hope has also been held out for synthetic foods as a means of easing future shortages. Few seem to give much thought as to the massive capital and industrial outlays necessary for any type of synthetic food industry. According to Georg Borgstrom: "Despite the euphoria over various new high-protein foods now emerging from laboratories — their impact on human nutrition has been insignificant" (*We Don't Know How,* p. 236). And, "Merely to provide for one single year's added numbers

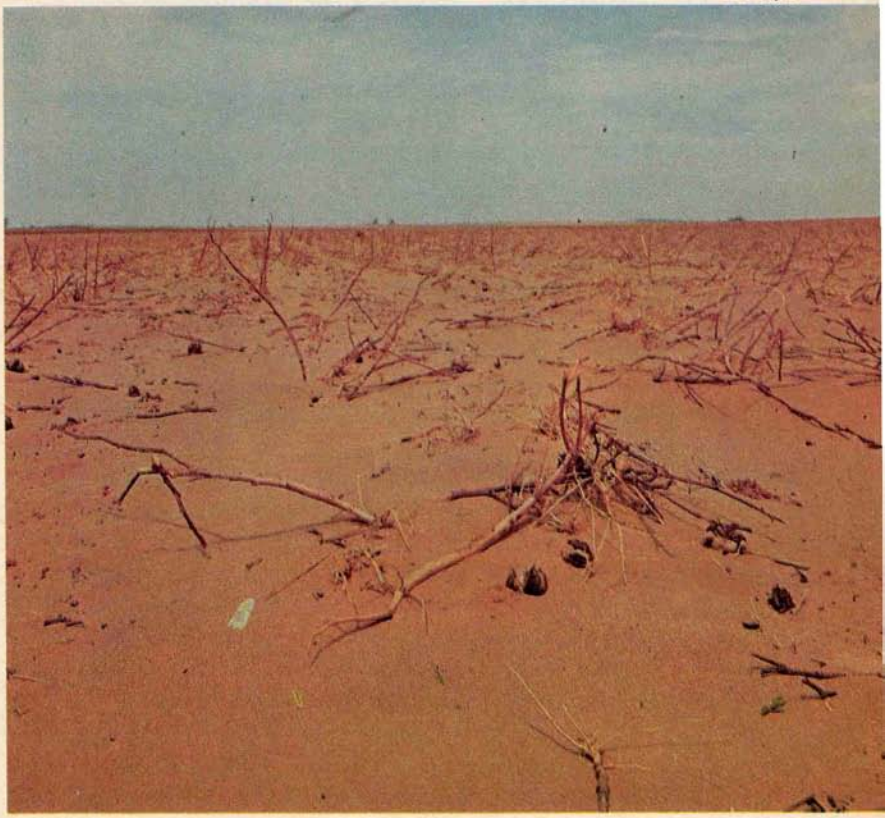
through chemistry — more than seventy million in 1967 — would require facilities greatly exceeding the total synthetic-organic industry of present-day United States. An *annual* investment of at least fifteen billion dollars would be needed" (*Too Many,* p. 24).

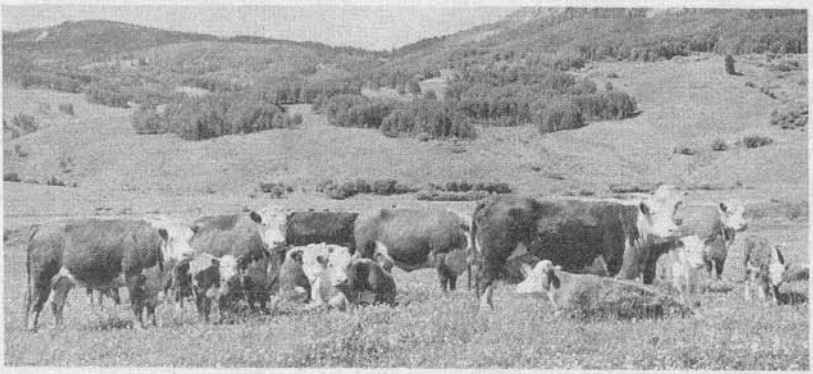
In a book edited by Clifford M. Hardin, former United States Secretary of Agriculture, this admission is made by a food-science expert: "There are those, of course, who put their faith in nonconventional agriculture, in the biological or chemical synthesis of foods. The time has not yet come, however, when factories can produce the bulk of basic foods that more than three billion

(Continued on page 42)

THE BARREN FRUITS *of man's land abuse. Deserts often result from deforestation and overgrazing.*

Bob Taylor





Bob Taylor

Eating Less Meat: Answer to the World Food Crisis?

In the wake of recent famines in India, Bangladesh and the African Sahel, much has been said concerning the virtues of eating less meat. Beef cattle, for instance, take in many more pounds of feed grain than they produce in the form of meat. If people in the affluent West were to cut down on their meat consumption, much more of this grain would be available to feed the hungry nations of the world.

In many respects this kind of eat-less-meat approach makes a lot of sense. Most Westerners, especially Americans, eat more meat than they should. And a significant portion of the beef consumed contains a higher content of fat than is considered healthy. According to the calculations of one leading food expert, if all Americans cut their meat and poultry consumption by one third, enough grain would be saved to feed the equivalent of 200 million people from India for one year.

But there are certain drawbacks to this approach. Animals such as beef cattle, dairy cattle and sheep do more than consume valuable food grains. Roughly 70 percent of their feed comes from forage on the open range. And significant portions of what they consume in feed lots are grains, wastes, by-products, meat scraps, meal, etc., which are not suitable for human consumption. A report by the Presi-

dent's Science Advisory Committee in 1967 summed up the particular contribution range-fed animals make to man's food supply: "Over 60 percent of the world's agricultural land is non-arable land suited only for grazing. Animals are the only practical means of utilizing this resource for human food production. . . . The use of small quantities of cereal grains as livestock feed in modern nations makes it possible to use, at low cost in terms of food that could be consumed by people, large quantities of forages and by-products that might not be used otherwise" (*The World Food Problem,* pp. 248, 249).

Another shortcoming to the meatless mentality: Man can't live on grain alone; he needs protein to survive. And the best kind of protein comes from animal products: meat, milk, eggs and cheese. Plant proteins such as those found in corn and wheat are deficient in some of the amino acids essential for proper nutrition. A person can survive quite adequately on a vegetarian diet if he has proper variety and balance. But a one-grain diet just won't suffice. According to the National Research Council Committee: "The greatest [nutritional] risk comes from undue reliance on a single plant food source. Usually a cereal grain or starchy root crop."

Theoretically it is possible to subsist off large quantities of low-protein foods. But usually a person's energy and appetite requirements are satisfied long before sufficient protein intake is achieved. Consequently, he may suffer protein deprivation without even consciously being aware of it at the time. This is especially true of children who have a limited bulk intake capacity.

One major reason why many living in the poorer parts of the world suffer is because they lack protein as well as calories. Simply sending them bulk shipments of grain is not going to solve their nutritional problems.

And even if consumers in the West were to reduce their meat consumption, this would not magically put grain into the mouths of the needy. Worldwide distribution of food grains, however inequitable it may be, is based on the dictates of supply and demand. Grain cannot reach the poor unless someone is willing to buy and distribute it.

If Westerners were able to abandon their headlong pursuit of affluence and contribute significant portions of their wealth toward helping feed the poor, substantial benefits might be derived. But over the long haul, with the population in the developing nations expected to double by the year 2000, even this type of humanitarian effort will probably not come close to solving the problem.

human beings require. We cannot wait for potential miracles while millions of people hunger. For many decades still we must depend on conventional agriculture and its improvement" (*Overcoming World Hunger,* p. 93). But the problem is mankind simply doesn't have "many decades" to solve the problem. "New foods" are needed immediately.

CORN BLIGHT *descended like a mushroom cloud over the 1970 U.S. corn crop: loss was 700 million bushels.*

Roger L. Smith



The Shortcomings of Technology

As long as population continues its unchecked growth, technology can do little to significantly shift the world's food-population balance. The Aswan High Dam is a good case in point. When initially conceived, it was designed to increase the arable land in Egypt by 15 percent. But by the time of its completion, Egypt's population had expanded by 35 percent.

Mexico had the same experience during her Green Revolution. According to Lester Brown: "Fifteen years of dramatic advances in wheat production made Mexico a net exporter of cereals in the late 1960s, but a population growth rate that ranks among the highest in the world has again converted Mexico into an importer of food" (*In the Human Interest,* p. 53).

Perhaps that is why John Hulse, a leading Canadian nutritionist, recently said: "Fancy technology will do little to ease the needs of hungry people." Much of what technology has done to increase food production is based on limited, finite resources. Many of the dramatic increases in crop yields that have been achieved are the result of intensive application of petroleum-based products such as pesticides and chemical

fertilizers. Given enough time and consumption, this petroleum base will vanish.

Continual expansion of the earth's food producing capacity ad infinitum is just not possible. As the U.N. Center for Economic and Social Information put it: "Unlike population, the earth is not expanding. Technology can produce more food per acre, render more land arable and possibly develop new types of food not requiring the use of agricultural land. But the earth is finite; its resources, however vast, are limited. This makes 'zero population growth' ultimately and inevitably the only viable alternative; any other alternative is simply unacceptable" (*World Population: The Task Ahead,* p. 25).

Worldwide Birth Control

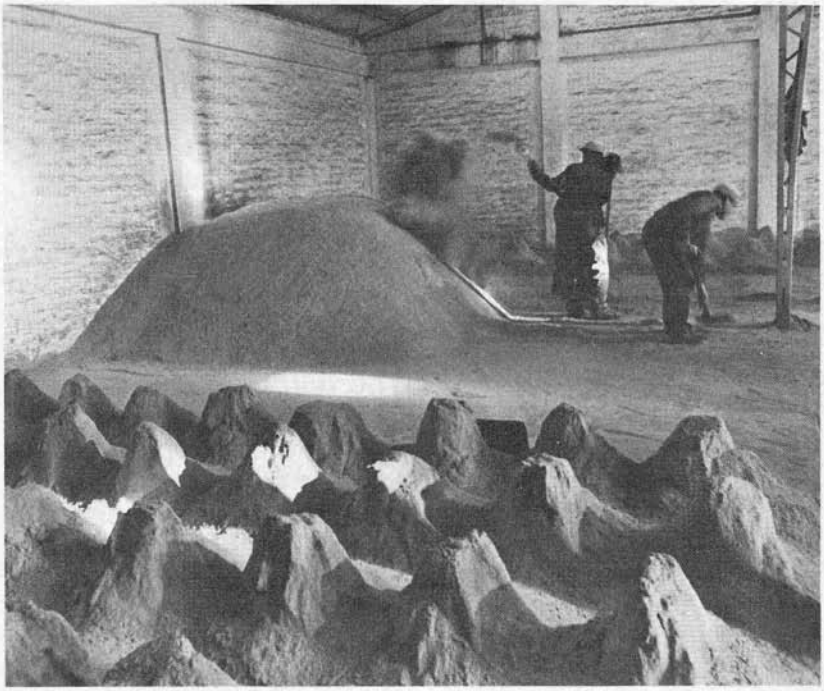
Ultimately, averting worldwide famine comes down to the issue of stabilizing the population of the earth. But as we have seen, the problems involved in cutting the world birthrate to "zero growth" are stupendous. Much of the world actually stands opposed to population control. Communism stands against it. Communists call Malthus' theory of population a "libel on the human race." Khrushchev called it a "cannibalistic theory."

Even many in the Western world stand opposed to birth control. The largest church body on earth, Roman Catholicism, is opposed to it. In fact, the Pope, while addressing delegates to the recent UN World Food Conference at Rome, made the following statement:

The religious and ideological hurdle is only part of the picture. Ignorance and tradition are even greater obstacles to implementing birth-control practices.

"It is inadmissible that those who have control of the wealth and resources of mankind should try to resolve the problems of hunger by forbidding the poor to be born."

The religious and ideological hurdle is only part of the picture. Ignorance and tradition are even greater obstacles to implementing birth-control practices. In much of Asia, for example, families are used to having as many children as possible. Children are a status symbol. They help do the work. A husband and wife try to have as many children as possible in the hope that at least one male



F.A.O. Photo

FISH PROCESSING *factory in Valparaiso, Chile, manufactures fish meal for export.*

child will survive to adulthood. Then the child can support them.

Besides, people love children. They aren't convinced that "two are enough." Usually they begin their family planning after they have had one more than the number of children they want.

A lack of doctors and nurses also hampers birth-control planning. In India, for example, the country's five-year plan begun in 1966 envisioned 23 million I.U.D. loop insertions. The problems facing this program were overwhelming. There were only 8,000 woman doctors in all of India to insert these loops. With this limited effort, there simply wasn't enough time or manpower available to educate and convince sizable numbers of Indians of the need for birth control.

On the other hand, Japan, South Korea and Taiwan have made remarkable strides toward achieving stable populations. But often overlooked is the fact that these nations had

already achieved relatively high levels of educational and economic development *before* they embarked on successful birth-control programs.

Mainland China is no ideal success story either. According to current estimates, the average Chinese is receiving only about 91% of optimum caloric requirements. A major crop failure could easily reduce China to the status of a "have-not" food nation.

Adding It Up

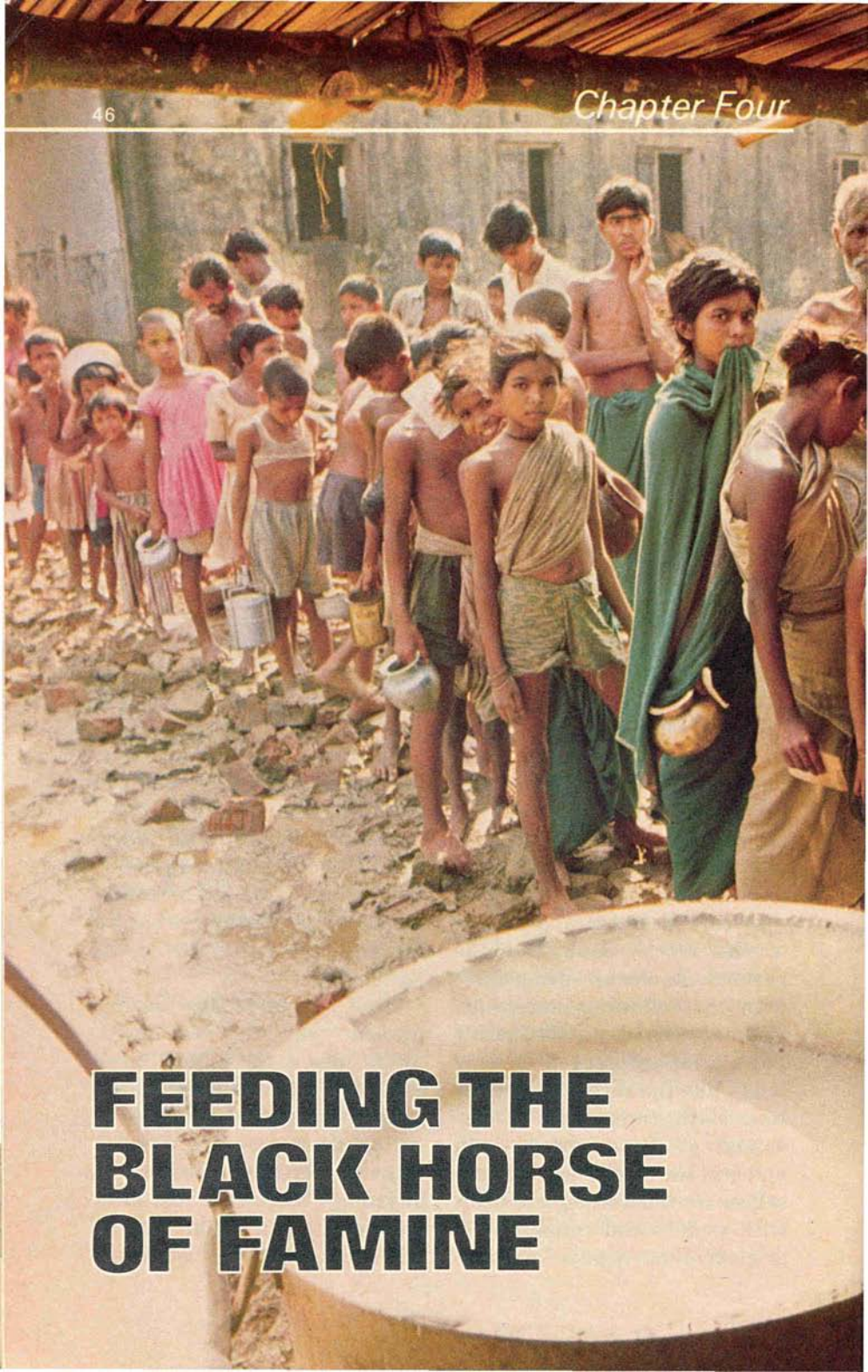
When we add up all of man's efforts to curb the population explosion, it seems to be like trying to stop a flood with a thimble. All the efforts of man — the new varieties of grain, harvesting the seas, developing new sources of protein from the oceans, etc. — only put off for a few more short years the final day of reckoning!

Robert McNamara, president of the World Bank, put the problem in proper perspective with the following statement: "The threat of unmanageable population pressures is very much like the threat of nuclear war. Both threats are undervalued.... Both threats can and will have catastrophic consequences unless they are dealt with rapidly and rationally. It is clear that population pressures in the underdeveloped societies can lead to economic tensions and political turbulence and cause stresses in the body politic that in the end can bring on conflict among nations."

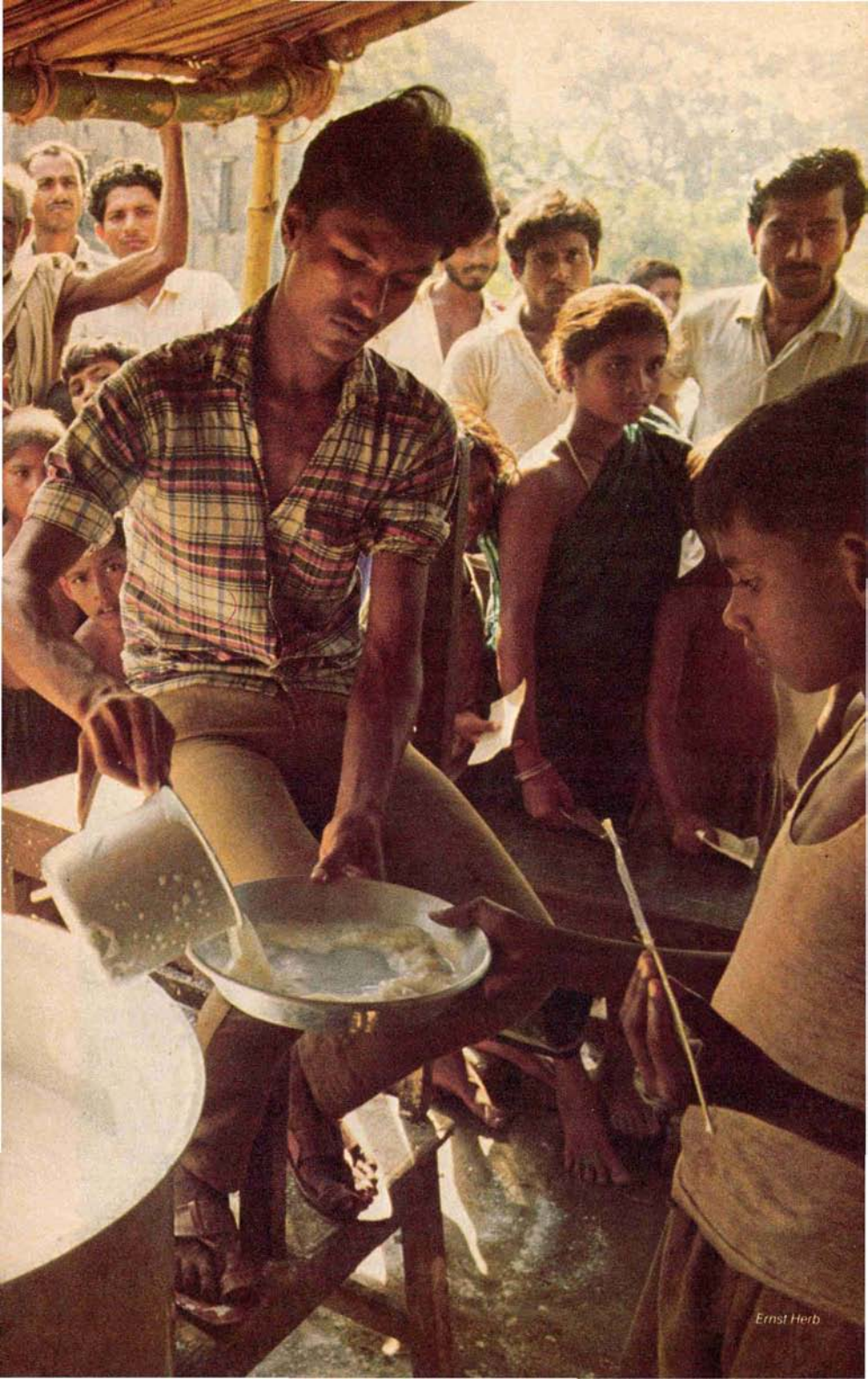
A group of Nobel Prize winners were even more explicit in their appraisal of the food-population situation: "Unless a favorable balance of population and resources is achieved with a minimum of delay, there is in prospect a Dark Age of human misery, famine, undereducation and unrest which could generate growing panic, exploding into wars fought to appropriate the dwindling means of survival."

Dr. Binay Sen, former director-general of the UN Food and Agriculture Organization, sounded this prophetic warning: "If the rate of food production cannot be significantly increased, *we must be prepared for the four horsemen of the Apocalypse."*

It all adds up to this: Barring nuclear war, the food-population race is the biggest, most explosive crisis to ever hit the human race! If mankind is going to avert ultimate disaster, he needs a greater solution than anything heretofore remotely envisioned. The final chapter will reveal what that solution is.



FEEDING THE BLACK HORSE OF FAMINE


Ernst Herb

Centuries ago the greatest prophet, forecaster, and newscaster who ever lived described in vivid detail the most climactic period in all of man's existence. The prophet, Jesus Christ, was referring to events immediately preceding the end or consummation of this present era of human history.

His answer came in response to His disciples' question: "Tell us, when will this be, and what will be the sign of your coming and of the close of the age?" (Matt. 24:3.)

Jesus spoke of several major events that would signal the beginning of this troubled period. After false prophets and wars came a third significant indicator: "... and there will be famines" (Matt. 24:7).

Some 60 years later, Christ further elaborated on this description when He gave the apostle John the prophecies concerning the Four Horsemen of the Apocalypse in the sixth chapter of the book of Revelation. Again the same basic sequence of events is described. Following the white horse representing false Christs and the red horse of war comes the black horse of famine: "And I beheld, and lo a black horse; and he that sat on him had a pair of balances in his hand. And I heard a voice in the midst of the four beasts say, A measure of wheat for a penny, and three measures of barley for a penny; and see thou hurt not the oil and the wine" (Rev. 6:5-6, KJV).

Unprecedented Famine

There have always been famines, but there have never been famines the likes of which the world is currently experiencing. Usually famines of the past came in conjunction with droughts, wars, and other natural or man-made disturbances. They were cyclical in nature. Today worldwide famine is built into the *structure* of world society. Famine is now a way of life for millions of people. Weather fluctuations, wars and crop failures only serve to exacerbate existing conditions.

Today's famines also differ in both nature and size from those of the past. Never before did multiple hundreds of millions of people suffer from hunger and malnutrition at any given period in history as they do today. As Paul and Arthur Simon wrote in *The Politics of*

World Hunger: "The population explosion has produced stress and deprivation on a scale without precedent, as well as a momentum of growth that boggles the mind" (p. 51).

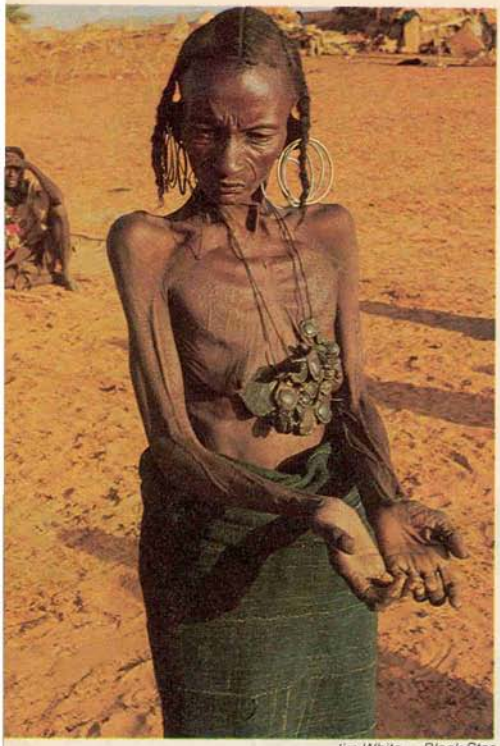
So Jesus Christ was not merely guessing about future famines. He was describing an age of human existence that was unique from all others in which widespread famine was only one of many interrelated events. In the 24th chapter of Matthew, He made this clear when He said: "For then there will be great tribulation, *such as has not been from the beginning of the world until now, no, and never will be"* (verse 21).

The prophet Jeremiah describes this tumultuous age as follows: "Alas! that day is so great *there is none like it;* it is a time of distress for Jacob . . ." (Jer. 30:7).

SOUTH VIETNAM *refugees clamor to purchase canned food from black market vendor.*

Ernst Herb





Jim White — Black Star

FULANI WOMAN *begs for food as a result of prolonged drought in Niger.*

Daniel likewise wrote: "And there shall be a time of trouble, *such as never has been* since there was a nation till that time" (Dan. 12:1).

Today, modern-day prophets have finally caught up with the patriarchs of old. Notice what Robert McNamara says about *this* era of world history: "We have to see the population problem as part . . . of a much wider social and political crisis that grows deeper with each decade and threatens to round off this century with years of unrest and turbulence, a *'time of troubles'* [emphasis ours] during which the forces of historical change threaten our frail twentieth century society with disintegration."

Also, Georg Borgstrom states: "As a human race we are heading for Supreme Disaster, and the great challenge to our generation is to avert this calamity. It has to be done in this crucial century, or mankind may well deprive itself of both its future and its history."

And worldwide famine, fueled by an exploding population and future international conflicts, will undoubtedly be a key catalyst in this rapidly deteriorating chain of events.

Old Testament Warnings

Christ, who was the *Logos* or Spokesman of the Old Testament (see I Cor. 10:4, John 1:1), also gave national warnings concerning famine through many of the prophets of old.

In these passages, famine, along with the 2nd and 4th horsemen, war and pestilence, are shown to be the ultimate result of false religion (the first horseman) and flagrant disobedience of God's commandments.

Notice some of the penalties

for disobedience recorded in the 26th chapter of Leviticus: "If after all this you have not learnt discipline but still defy me, I in turn will defy you and scourge you seven times over for your sins. I will bring war in vengeance upon you . . . you shall be herded into your cities, I will send *pestilence* among you, and you shall be given over to the enemy. *I will cut short your daily bread* until ten women can bake your bread in a single oven; they shall dole it out by weight [see Revelation 6:5-6], and though you eat, you shall not be satisfied. If in spite of this you do not listen to me and still defy me, I will defy you in anger, and I myself will punish you seven times over for your sins. Instead of meat you shall eat your sons and daughters" (Lev. 26:23-28, *The New English Bible*).

Other passages warn of famine-producing upsets in weather (Amos 4:7, Deut. 28:24); ruined harvests (Ezek. 5:16, Deut. 28:17); blighted crops (Amos 4:9); harmful insect pests (Deut. 28:39, 42); and nonproductive soil (Deut. 28:23).

Israel of old didn't heed these warnings and suffered the consequences. Today many of the modern nations of the world, including the United States and Britain, are following in the footsteps of the ancient Israelites and are beginning to pay the same penalties as their predecessors.

The Bitter Harvest of Disobedience

And as men continue to flagrantly disregard the laws of their Creator, such conditions will continue to be aggravated. Jesus Christ went on to warn of similar calamities in the future. In the book of Revelation, He depicts an earth whose entire food producing ecosystem will be in jeopardy.

"And lo a black horse; and he that sat on him had a pair of balances in his hand. And I heard a voice in the midst of the four beasts say, A measure of wheat for a penny, and three measures of barley for a penny; and see thou hurt not the oil and the wine." (Revelation 6:5-6)

Pollution of the oceans on an unprecedented scale will undoubtedly cause a dramatic decline in the world's fish harvest (Rev. 8:8, 9; 16:3). Wanton de-

(Continued on page 54)



Ernst Herb

The Future of Famine

Hubert H. Humphrey: "For years we laughed at Malthus' gloomy theory, but now he is coming into his own as we have come to the realization that the world's resources are not unlimited."

Georg Borgstrom, professor of food science, Michigan State University: "Our future is at stake in this very century, and food is the key issue. . . . As a human race we are heading for Supreme Disaster, and the great challenge to our generation is to avert this calamity. We need to declare the Great War for Human Survival — but it is getting late. Time is running out on us."

Gunnar Myrdal: "It is difficult to see how the world can avoid a food catastrophe within the immediate future years."

C. P. Snow: "The most dreadful of all — again, men of sober judgment have been saying it for years — is that many millions of people in the poor countries are going to starve to death before our eyes — or, to complete the domestic picture, we shall see them doing so upon our television sets."

Lester R. Brown: "We delude ourselves if we think the years ahead will be easy. At best they will be traumatic, and they could be catastrophic."

Thomas M. Ware, head of the Freedom From Hunger Foundation: "Very few grasp the magnitude of the danger that confronts us. . . . The catastrophe is not something that may happen; on the contrary it is a mathematical certainty that it will happen."

Philip Handler, president of the National Academy of Sciences: "I have difficulty facing the future with equanimity. This is a bitter pill indeed. With my fellow scientists, I was enraptured by a beautiful panorama of understanding offered by science in our time. . . . But the planet is small, and there are too many of us."

Second Report to the Club of Rome: "The most thorough analyses of a large number of scenarios using our world system computer model lead to the inescapable conclusion that mankind's options for avoiding catastrophe are decreasing, while delays in implementing the options are, quite literally, deadly."

Don Paarlberg, chief economist, U.S. Department of Agriculture: "Those who are pessimistic about the ability of the world to feed its people have more persuasive evidence to lay before us than in many years."

Recent report by House Subcommittee: "In all probability, the world can expect more, rather than less, disasters associated with malnutrition. The world food crisis will not disappear spontaneously or soon, and maybe never."

Dr. Frederick J. Stare, leading food research expert: "Mankind has not yet solved his food problem . . . There is little reason to expect sudden dramatic progress during the next decade."

struction of one third of the earth's plant cover and forests (Rev. 8:7) will contribute to climatic upsets, advance of the deserts, and the loss of valuable cropland. And massive pollution of vital freshwater sources (Rev. 8:10, 11; 16:4) will most likely dry up the fruits of irrigated crop production.

"As a human race we are heading for Supreme Disaster, and the great challenge to our generation is to avert this calamity. It has to be done in this crucial century."

Perhaps lack of food or resources resulting from these global catastrophes explains why a massive army of 200 million men decides to march on the Middle East in the 16th chapter of Revelation. In any event, Jesus Christ went on to show that unless He personally intervened in the affairs of men during this tumultuous time period, all life would be erased from off the face of the earth (Matt. 24:22).

A Global Surplus of Food

Christ's intervention will set off a chain of events that will finally bring a halt to the continuous rounds of famine and hunger the human race has experienced down through history. Satan the Devil will be put away (Rev. 20:1-2), and with him will go the centuries-old system of greed and exploitation that has left many a broken, hungry, and destitute person in its wake. The "dispossessed masses" will become a thing of the past as every individual will have a chance to own agriculturally productive real estate (Micah 4:4). Farming methods will be overhauled until lush crops are considered commonplace (Isa. 32:15), and one harvest follows hard on the heels of the previous one (Amos 9:13-14).

The earth's arable land mass will be greatly expanded as mountains are lowered (Isa. 40:4) and the sands of the deserts begin an unprecedented retreat (Isa. 35:1, 7). Only then will the age-old problem of famine finally be put to rest.

ADDITIONAL READING

The Worldwide Church of God publishes many informative booklets on a wide range of biblical topics: Four are listed below.

Is This the End Time?

Do the present prophesied end-time conditions represent the end of this physical globe as well as the close of this age? Or does our presently plundered planet have a permanent and vital place in the universe? And are these worsening world conditions just a horrible prelude to a utopian era of peace and plenty?

How To Understand Prophecy

The major events that will headline tomorrow's news are already pre-recorded. Yet biblical prophecy is a complete mystery to millions. This booklet reveals certain vital keys that will unlock predictive prophecy to your understanding. It will explain prophetic time lapses and prophetic symbolism.

The Ten Commandments

Are the Ten Commandments obsolete in today's chaotic, war-weary world? Or are they as applicable now as they were when God gave them on Mount Sinai? Here is a book explaining plainly this inexorable living law — soon to become the global standard for the peaceful, prosperous, joyful World Tomorrow.

Write for your free copies of the above booklets. Worldwide mailing addresses are listed at the end of this booklet.

Bibliography

Altschul, Aaron M. *World Protein Resources.* Washington, D.C.: American Chemical Society, 1966.

Berg, Alan. *The Nutrition Factor.* Washington, D.C.: The Brookings Institute, 1973.

Borgstrom, Georg. *Focal Points.* New York: MacMillan Publishing Co., Inc., 1973.

Borgstrom, Georg. *Harvesting the Earth.* New York: Abelard-Schuman, 1973.

Borgstrom, Georg. *The Hungry Planet.* New York: MacMillan Company, 1967.

Borgstrom, Georg. *Too Many.* London: MacMillan Co., 1969.

Brown, Lester R. *In the Human Interest.* New York: W. W. Norton & Co., 1974.

Brown, Lester R. and Eckholm, Erik P. *By Bread Alone.* New York: Praeger Publishers, 1974.

Ehrlich, Paul R. and Ehrlich, Anne H. *Population, Resources, and Environment.* San Francisco: W. H. Freeman and Company, 1970.

Ehrlich Paul R. and Pirages, Dennis C. *Ark II.* New York: The Viking Press, 1974.

Halacy, D. S., Jr. *The Geometry of Hunger.* New York: Harper & Row Publishers, 1972.

Hardin, Clifford M., ed. *Overcoming World Hunger.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.

McNamara, Robert S. *One Hundred Countries, Two Billion People.* New York: Praeger Publishers, 1973.

Mesarovic, Mihajlo and Pestel, Eduard. *Mankind at the Turning Point.* New York: E. P. Dutton & Co., Inc., 1974.

Paddock, William and Paddock, Elizabeth. *We Don't Know How.* Ames, Iowa: Iowa State University Press, 1973.

Paddock, William and Paddock, Paul. *Famine 1975.* Boston: Little Brown & Co., 1967.

Population Reference Bureau. *World Population Projections: Alternative Paths to Zero Growth.* Washington, D. C.: Population Reference Bureau, Inc., 1974.

President's Science Advisory Committee. *The World Food Problem.* White House, 1967.
Schroeder, Richard C. *World Food Needs.* Washington, D. C.: Editorial Research Reports, 1974.
Simon, Paul and Simon, Arthur. *The Politics of World Hunger.* New York: Harper's Magazine Press, 1973.
United Nations. *Assessment of the World Food Situation.* Rome: United Nations World Food Conference, 1974.
United Nations Center for Economic and Social Information. *World Population: The Task Ahead.* New York: United Nations, 1974.
World Bank. *Population Planning.* Washington, D. C.: World Bank, 1972.

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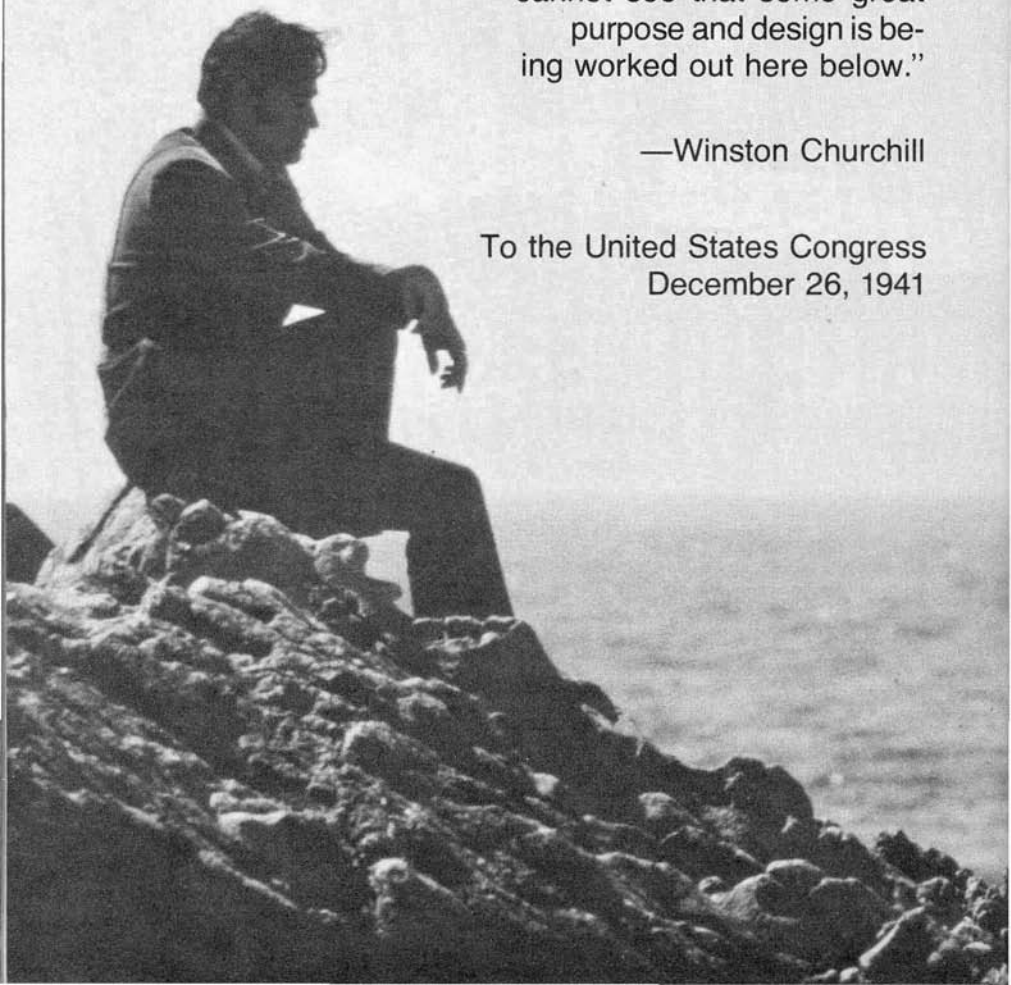
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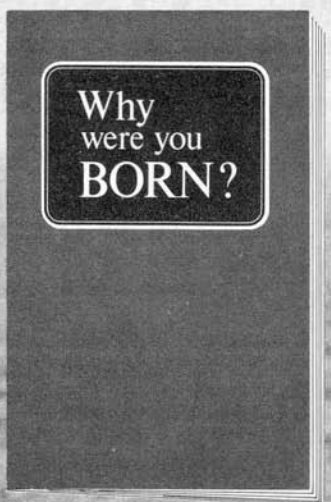
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7603